Test

→ Identify period, frequency, amplitude, horz./vert. shift

→ Write equation for application problems

→ Graph equations → x-values (5), y-values (3)

→ $C = 2\pi r$, $C = \pi d$

→ Tricky:

- amplitude all positive
- horz. shift hidden $\cos\left(2x - \frac{\pi}{2}\right)$ $\left[\frac{\pi}{4} \text{ right}\right]$
- vert. shift $-2 + 8\cos 2x$ $[-2]$
- tan/cot → period $[\pi]$

$y = a\cos\left[b(x-c)\right] + d$

$y = 2\cos\left[\frac{1}{2}(x-\pi)\right] + 4$

Amp. = 2

Horz. shift = π right

Vert. shift = 4 up

Period = $\frac{2\pi}{\frac{1}{2}} = 4\pi$

$\frac{2\pi}{\frac{1}{2}} = 2\pi \cdot \frac{2}{1} = 4\pi$

$\frac{\pi}{\frac{1}{2}} = \pi \cdot \frac{2}{1} = \pi$

$y = 2\cos\left(\frac{\frac{1}{2}}{\frac{1}{2}}x - \frac{\frac{\pi}{2}}{\frac{1}{2}}\right) + 4$

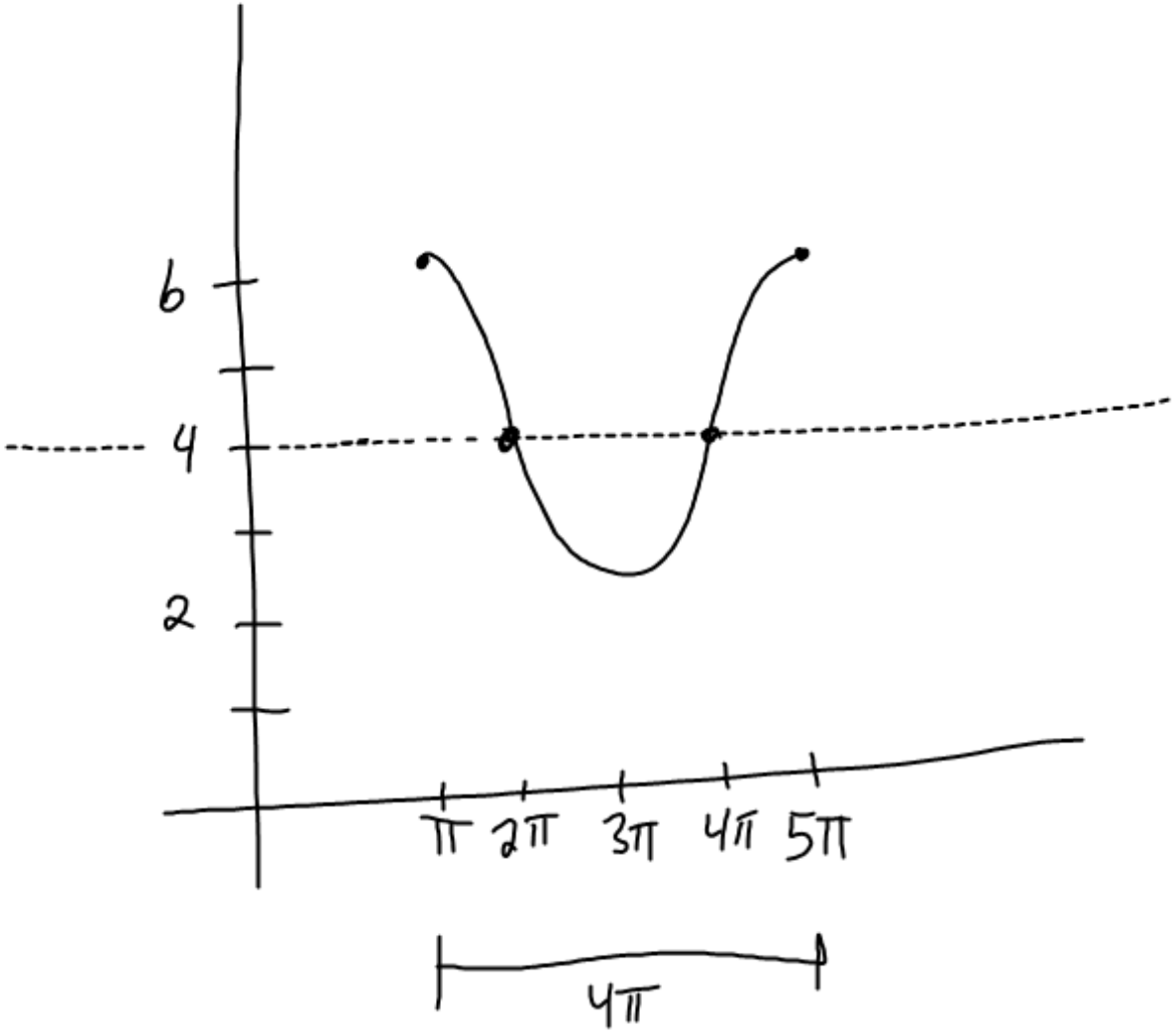
$2\cos\left[\frac{1}{2}(1x-\pi)\right] + 4$

Amp = 2

Horz. shift = π right

$y = 2\cos\left[\frac{1}{2}(x-\pi)\right]+4$

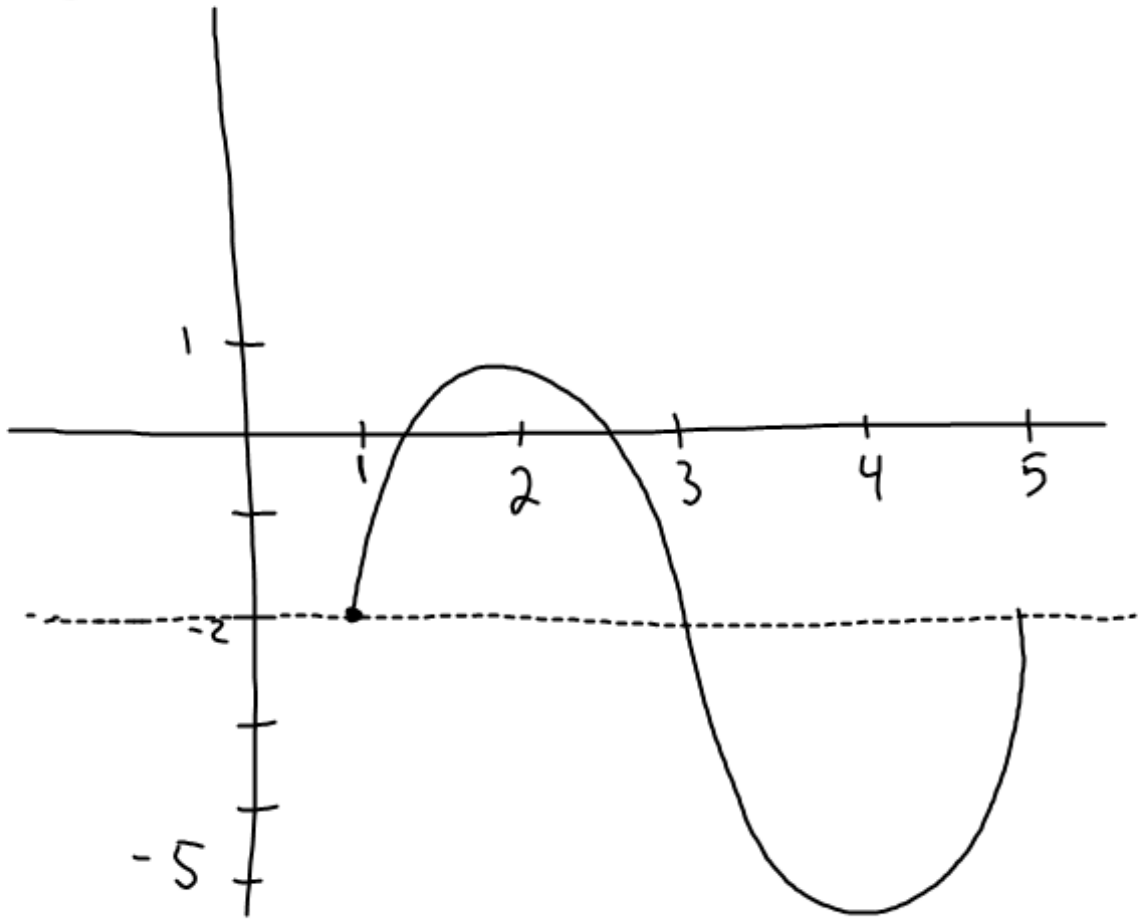
Period $\rightarrow \frac{2\pi}{\frac{1}{2}} \rightarrow \frac{2\pi}{1}\cdot\frac{2}{1} = 4\pi$



$$y = -2 + 3\sin\left[\frac{\pi}{2}(x-1)\right]$$

$$y = 3\sin\left[\frac{\pi}{2}(x-1)\right] - 2$$

$$P = \frac{2\pi}{\frac{\pi}{2}} \Rightarrow \frac{2\pi}{1} \cdot \frac{2}{\pi} = 4$$



$$y = -1 - \sec\left(2x - \frac{\pi}{3}\right)$$

$$0 \le 2x - \frac{\pi}{3} \le 2\pi$$

$$+\frac{\pi}{3} \qquad +\frac{\pi}{3} \qquad +\frac{\pi}{3}$$

$$\frac{\frac{\pi}{3}}{2} \le \frac{2x}{2} \le \frac{\frac{7\pi}{3}}{2}$$

$$\frac{\pi}{6} \le x \le \frac{7\pi}{6}$$